

In nature we find the anhydrite associated with rock salt. Supposing that the deposition of the chlorides of sodium and potassium took place under a moderately high column of saturated water, the pressure exercised by this column would give a satisfactory explanation for the fact that calcic sulphate crystallized as anhydrite. The presence of gypsum in the same deposits would suggest a subsequent metamorphosis of the anhydrite into gypsum by taking up water.

JANUARY 21.

Dr. BRIDGES in the chair.

Twenty members present.

Notice of Fossil Vertebrates from the Miocene of Virginia.—

Prof. LEIDY directed attention to some fossils, part of a small collection recently received. They were found imbedded in blue clay containing an abundance of fossil diatoms, among which *Coscinodiscus* is especially conspicuous. The fossil vertebrate remains consist mainly of vertebræ and teeth of cetaceans, vertebræ of bony fishes, teeth of sharks, and spines of rays. Among them also there is a portion of a humerus of a bird, and several worn teeth of a peccary. Besides these there are specimens which may be regarded as characteristic of the following undescribed species.

PROTOCAMELUS VIRGINIENSIS. Represented by the lower last premolar, and the first and last molars of an animal about the size of the existing Lama, and intermediate in size to *Protocamelus occidentalis* and *P. gracilis* of the tertiary of the Niobrara River, Nebraska.

TAUTOGA (PROTAUTOGA) CONIDENS. Represented by a premaxillary with teeth, and portion of another with the first tooth. The specimens indicate a much larger species than the living Black Fish *Tautoga*. The bones and relative position of the teeth exhibit some peculiarities. The premaxillary externally is flatter than in the Black Fish, and it appears as if it did not turn down in a hook-like end at its outer extremity. The teeth also are separated by comparatively wide intervals, independently of the interspaces provided for successional teeth. The form of the teeth is the same as in the Black Fish. One of the specimens contains the base of the first large tooth and a row behind of seven other teeth. The other specimen contains the first large tooth, which is nearly half an inch in length, but proportionately more robust than in the Black Fish.

ACIPENSER ORNATUS. Founded on a dorso-lateral plate indicating an extinct species of sturgeon of medium size. The length or height of the plate is about $2\frac{1}{2}$ inches; its breadth along the crest is an inch and three-fourths.

Mr. THOMAS MEEHAN said he had the pleasure of offering to the Academy some facts in regard to the fertilization of flowers which confirmed the popular view that pollen of one variety had an immediate influence on the structure of the fruit of another variety, as well as on the progeny; and also he thought furnishing some entirely new facts in regard to the ability of a seed germ to receive impregnation from two distinct sources. He had presented to the Academy last year fruit gathered from a pear tree, which the members would remember had the regular seeds and carpels of a pear, but the flesh was fibrous and not granular as in the pear, and the external membranes or rind was that of an apple. An apple tree had its branches interwoven with that of the pear, and it had been assumed that the pollen of the apple had so influenced the fruit of the pear as to produce an immediate effect in the way presented.

But it had been urged in some quarters that this assumption was open to objection. It was now fully proved that changes of form occurred through what is now known as *bud variations* and independent of any seminal action; and it was contended this might have been the case in the pear-apple referred to. That there are these changes is well known. The peach is believed to be a development of this character from the almond—at any rate the nectarine is positively known to have sprung from a bud—not from a seed of the peach. But in case it might still be argued that in some way there was a latent germinal influence in the cells of plants the results of cross breeding many generations past; in other words, that the new appearance was simply a reversion and not a new creation, there had been some evidence in regard to the sweet potato offered to the Academy a few years ago, proving bud variation quite independent of any supposed reversionary character derived from seminal influence. There are no closely allied species to the sweet potatoes grown. Moreover it does not flower in these northern regions; yet root stocks had been exhibited here with tubers of two varieties distinct in color, form, and other characters growing on the same plant.

But the gentleman who sent the apples to the Academy, Mr. Arnold of Paris, Canada, determined to observe the effect of cross fertilization on Indian corn. He procured a very peculiar variety of which Mr. Meehan exhibited an ear, not known in the vicinity—a brown variety, with a circular dent at the apex—and raised one plant from it. The first set of flowers were permitted to be fertilized by their own pollen in order to test whether there was any reversionary tendency in the plant, or the pollen of any other variety in the vicinity. The ear now produced was the result—every grain being like its parent. The corn plant produces two ears on each stalk. As soon as the “silk”—the pistils of this second ear—appeared, the pollen—in a “tassel”—of the common yellow flint corn was procured, set in a bottle of water tied near the de-

veloping ear, the plant's own tassel having been cut away some time previous. After a short time this set of male flowers was removed, and a panicle of male flowers from a white variety was introduced to the same bottle in order to afford it the opportunity of operating on the same female flowers. The result was the ear now presented. The base of *each grain* was of the yellow flint corn, but the *upper half* of the white variety.

Those who opposed the facts of evolution by continually cautioning its advocates against giving way to "imagination," and "brilliant speculations," he thought might be profitably benefited by their own suggestions. There was comparatively little to sustain the idea of reversion, but fancied resemblance—and this resemblance not the result of a comparison of two facts side by side; but a fact on one hand compared with memory, and often the distant and vague memory of another long in the past. At any rate, in these experiments of Mr. Arnold, there was the test applied to guard against any objection of either reversion or evolution, which, though not absolutely perfect, was as near so as the vast mass of human experience was; and the result was he thought no escape from the conclusion, not only that there was an immediate influence on the seed and the whole fruit structure by the application of strange pollen; but the still more important fact, hardly before more than suspected, that one ovule could receive and be affected by the pollen of two distinct parents, and this too after some time had elapsed between the first and second impregnation.

JANUARY 28.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-seven members present.

The following gentlemen were elected members: Charles Sinnickson, Chas. I. Yorke, Jr., John S. Sinnickson, M.D., Armon D. Trimble, and Howard N. Potts.

The following standing committees were elected for the year 1873:—

ANTHROPOLOGY.

J. Aitken Meigs,
Henry S. Schell,
J. F. Richardson.

COMPARATIVE ANATOMY.

Harrison Allen,
J. H. McQuillen,
Jos. Leidy,
Henry C. Chapman.